IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method for manufacturing a bipolar transistor, ~~of the type comprising a base, an emitter and a collector formed on a substrate, said method~~ comprising the steps of:

etching a trench in [[said]] a substrate between a first area for forming a base and an emitter ~~(base/emitter area)~~ and a second area for forming a sinker and a collector;

doping a portion of said substrate in said second area to form a sinker and collector layer comprising a sinker portion and a collector portion; and

establishing a value of breakdown voltage for said bipolar transistor by causing a distance of said collector portion from said first area ~~(base/emitter area)~~ to have a selected value.

2. (Currently Amended) The method as set forth in Claim 1 wherein said step of doping a portion of said substrate to form a sinker and collector layer comprising a sinker portion and a collector portion comprises the steps of:

implanting dopant in a portion of said substrate at [[the]] a bottom of said trench to create said collector portion of said sinker and collector layer; and

implanting dopant in a portion of said substrate that is located adjacent to said collector portion but not in said trench to create said sinker portion of said sinker and collector layer.

3. (Currently Amended) The method as set forth in Claim 2 further comprising the step of:

applying a heat treatment to diffuse the dopant in said sinker portion into adjacent substrate areas and to diffuse the dopant in said collector portion into adjacent substrate areas until said sinker portion and said collector portion are joined to form said sinker and collector layer.

4. (Currently Amended) The method as set forth in Claim 3 further comprising the step of:

terminating said heat treatment when said dopant in said ~~sinker~~ collector portion diffuses laterally under said trench to a desired distance from said first area ~~(base/emitter area)~~.

5. (Original) The method as set forth in Claim 1 further comprising the step of:

etching said trench to a depth that optimizes a value of resistance of said bipolar transistor versus breakdown voltage of said bipolar transistor.

6. (Currently Amended) The method as set forth in Claim 1 wherein said step of establishing a value of breakdown voltage for said bipolar transistor by causing a distance of said collector portion from said first area ~~(base/emitter area)~~ to have a selected value comprises the steps of:

placing a collector and sinker mask over a portion of said trench that is adjacent to said first area; and

selecting a lateral extent of a horizontal portion of said collector and sinker mask to control a distance of a subsequent lateral diffusion of said collector portion from said first area ~~(base/emitter area)~~.

7. (Currently Amended) The method as set forth in Claim 6 wherein said lateral extent of said horizontal portion of said collector and sinker mask is selected so that [[a]] the subsequent lateral diffusion of said collector portion does not extend into a portion of said substrate layer that is located within a specified distance from a wall of said trench that is adjacent to said first area ~~(base/emitter area)~~.

8. (Original) The method as set forth in Claim 7 wherein said specified distance is a distance that optimizes a value of resistance of said bipolar transistor versus breakdown voltage of said bipolar transistor.

9. (Currently Amended) A bipolar transistor, ~~of the type comprising a base, an emitter and a collector formed on a substrate, said bipolar transistor~~ comprising:

a trench etched in [[said]] a substrate between a first area for forming a base and an emitter and a second area for forming a sinker and a collector; and

a portion of said substrate in said second area doped to form a sinker and collector layer comprising a sinker portion and a collector portion;

wherein ~~a length of~~ said collector portion is formed having a selected distance from said first area ~~(base/emitter area)~~ to establish a selected value of breakdown voltage for said bipolar transistor.

10. (Currently Amended) The bipolar transistor as set forth in Claim 9 wherein said sinker and collector layer comprises:

a portion of said substrate at [[the]] a bottom of said trench that is doped to create said collector portion of said sinker and collector layer; and

a portion of said substrate that is located adjacent to said collector portion but not in said trench that is doped to create said sinker portion of said sinker and collector layer.

11. (Original) The bipolar transistor as set forth in Claim 10 further comprising:

said sinker portion having dopant diffused into adjacent substrate areas and said collector portion having dopant diffused into adjacent substrate areas wherein said diffused dopant joins said sinker portion and said collector portion to form said sinker and collector layer.

12. (Currently Amended) The bipolar transistor as set forth in Claim 11 ~~further comprising~~ wherein:

~~said collector portion having~~ the dopant of the collector portion ~~that~~ has diffused laterally under said trench to a desired distance from said first area ~~(base/emitter area)~~.

13. (Original) The bipolar transistor as set forth in Claim 9 wherein said trench is etched to a depth that optimizes a value of resistance of said bipolar transistor versus breakdown voltage of said bipolar transistor.

14. (Currently Amended) The bipolar transistor as set forth in Claim 9 wherein said selected distance ~~of said collector portion that is formed having a selected distance from said first area (base/emitter area) to establish a selected value of breakdown voltage for said bipolar transistor~~ is determined by:

placing a collector and sinker mask over a portion of said trench that is adjacent to said first area; and

selecting a lateral spacing of a horizontal portion of said collector and sinker mask from said first area ~~(base/emitter area)~~ to control a length of a subsequent lateral diffusion of said collector portion.

15. (Currently Amended) The bipolar transistor as set forth in Claim 14 wherein said lateral spacing of said horizontal portion of said collector and sinker mask is selected so that [[a]] the subsequent lateral diffusion of said collector portion does not extend into a portion of said substrate layer that is located within a specified distance from a wall of said trench that is adjacent to said first area ~~(base/emitter area)~~.

16. (Original) The bipolar transistor as set forth in Claim 15 wherein said specified distance is a distance that optimizes a value of resistance of said bipolar transistor versus breakdown voltage of said bipolar transistor.

17. (Currently Amended) A bipolar transistor, ~~of the type comprising a base, an emitter and a collector formed on a substrate, said bipolar transistor~~ comprising:

a trench etched in [[said]] a substrate between a first area for forming a base and an emitter ~~(base/emitter area)~~ and a second area for forming a sinker and a collector; and

a sinker and collector layer comprising a sinker portion and a collector portion formed by doping a portion of said substrate;

wherein a value of breakdown voltage for said bipolar transistor is determined by a distance of said collector portion from said first area ~~(base/emitter area)~~.

18. (Currently Amended) The bipolar transistor as set forth in Claim 17 wherein lateral diffusion of dopant in said collector portion determines said distance of said collector portion from said first area ~~(base/collector area)~~.

19. (Currently Amended) The bipolar transistor set forth in Claim 18 wherein said dopant in said collector portion at [[the]] a bottom of said trench is laterally diffused under said trench by heat treatment.

20. (Original) The bipolar transistor as set forth in Claim 18 wherein a distance of said collector portion before dopant in said collector portion laterally diffuses is determined by a length of a horizontal portion of a collector and sinker mask.

21. (New) The method as set forth in Claim 1, wherein the sinker portion is located adjacent to the trench and the collector portion is located at least partially under the trench.